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Cetiana

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CETIANA

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HONORABLE MENTION

Inspired by the people and nations of Ethiopia

INTRODUCTION

The Cetiana prototype is a home majorly inspired from the Nationalities from the Southern Nations, Nationalities, and Peoples' Region in Ethiopia (SNNPR). The SNNPR is a conglomerate of different traditional people. Based on the 2007 Census conducted by the Central Statistical Agency of Ethiopia (CSA), the SNNPR has an estimated total population of 14,929,548. 89.98 percent of the population are estimated to be rural inhabitants, while 10.02 percent are urban; this makes the SNNNPR Ethiopia's most rural region. With an estimated area of 105,887.18 square kilometers, this region has an estimated density of 141 people per square kilometer. For the entire region, 3,110,995 households were counted, which results in an average of 4.8 persons to a household, with urban households having an average of 3.9 and rural households with 4.9 people.

The SNNPR, being an amalgam of the main homelands of numerous ethnicities, contains over 45 indigenous ethnic groups.

INSPIRATION FROM TRADITIONAL HOUSES

The Gurage people are a Semitic-speaking ethnic group in Ethiopia. According to the 2007 national Census, its population is 1,867,377 people, of whom 792,659 are urban dwellers. This is 2.53 percent of the total population of Ethiopia and 7.52 percent of the Southern Nations, Nationalities, and People's Region (SNNPR). The Gurage people traditionally inhabit a fertile, semi-mountainous region in southwest Ethiopia, about 125 kilometers southwest of Addis Ababa, bordering the Awash River in the north, the Gibe River to the southwest, and Lake Zway in the east. In addition, according to the CSA, the Gurage can also be found in large numbers in Addis Ababa, Oromia Region, Dire Dawa , Harari Region, Somali Region, Amhara Region, Gambella Region, Benishangul-Gumuz Region, and Tigray Region.

Wolayita: In the mountainous region east of the river Omo, hundreds of stone Monoliths bear witness to the long time habitation of this area by early men and the people who live there today are very likely from fairly early stock. These people are light-complexioned and short, and they belong to the vast Ometo language group.

As far as religion, the people belong to either the Muslim or the Christian traditions and celebrate in temples shaped from the rock, akin to those found in Lasta and Tigray.

EVOLUTION OF FOOT PRINT

All three traditional houses have a similar circular footprint. The reason for this is the ease of construction and nature of the structure used. Although the construction is easy, the single monotonous circular footprint limits the programs within and require multiple blocks to accommodate various programs.

In an urban context, the parceling of land is made in a rectangular manner, in order to make the best use of the land changing the footprint of the traditional houses. A rectangular manner will be suitable in case of urban centers.

Further re-adjusting the rectangular footprint enables the creation of pocket courtyard spaces and a clear definition of spaces as well as more surface area for lighting and ventilation.

SPACE PLANNING

Space Usage Concept

Most traditional spaces, or traditional houses in Ethiopia, in the SNNPR have an open floor plan system and programs are segregated using furniture arrangements claiming their own space. The advantage of having an open floor plan enables multiple programs to take place within a single space at different times. This space usage system enables flexibility of programs and enhances versatility.

Courtyard Spaces

Courtyard spaces are vital to the SNNPR people of Ethiopia because it is where most daily activities and family gatherings take place. In this prototype the living spaces and the kitchen extend to the open courtyard allowing traditional cooking and different activities to take place.

'MODERN AFRICAN KITCHEN'

Ethiopia has more than 80 ethnic groups meaning it has different kinds of food.. One of the most famous is injera, a thin, porous bread, and is a product of enset for the SNNPRs. Just as there are the basic space requirements in a standard international kitchen, the same theory applies for an African kitchen i.e. storing, washing, cooking/preparing and heating. In the case of the African kitchen, additional exterior use is needed especially for the preparation of raw materials. Examples would be spices that are sun-dried and the manual grinding and pounding when using a mortar and pestle when making coffee, just to mention a few.

The integration of modern kitchen in this prototype includes introduction of electrically generated utilities: refrigerated stress, blenders, etc. Injera and kocho are common in the SNNPR and it is a necessity to have a circular oven locally known as a mitad.

With this particular prototype, the kitchen is arranged in a flexible manner. It has sufficient space for open air and high ceilings for ventilation and releasing heat with a vertical exhaust system common in most traditional kitchens. This kitchen layout would be best if it were to be a building code for African kitchens.

STRUCTURAL SYSTEM

The design of this prototype enables builders to use multiple materials, making it versatile and giving the structural system a variety of options. The recommended structural system of this prototype is a FRAME system which makes the construction easy to manage. Listed below are possibilities of each component. Items are written in hierarchy from the best option to the least efficient.

Walls: straw-board, wooden panels, adobe super block, or CIS with insulation
Floor: concrete and timber, timber alone, or concrete alone
Fenestrations: timber, bamboo, steel frames and screens with 6mm clear glass glazing
Roofing: CIS ega sheet, shingles, clay tiles, bamboo roof
Foundation: precast concrete pads, strip masonry footing

Bamboo in Ethiopia

The Ethiopian natural bamboo forest is about 1M ha, which is 7 percent of the world total and 67 percent of the African bamboo forest area.

Bamboo Species and Ecology

Two recorded natural species of bamboo grown in Ethiopia are:
Arundinaria alpine k.shum known as "highland bamboo"
Oxytenanthera abyssinica known as "lowland bamboo"

SUSTAINABILITY

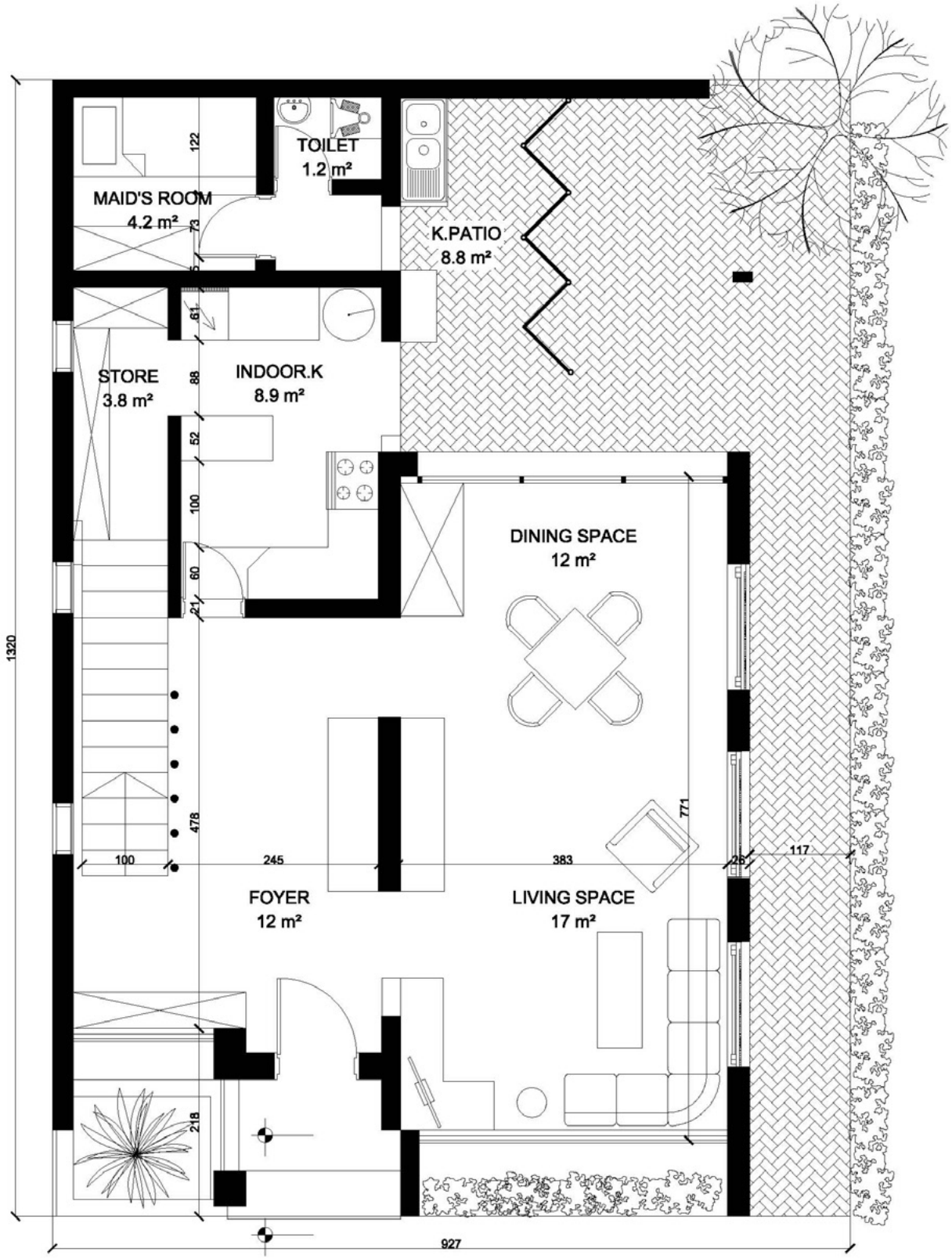
- Bamboo can grow as fast as three feet in a day
- Can be sustainably harvested every year

- Uses a small fraction of the land required by trees for the same structural work
- The waste (leaves and branches) can be as nutritious of an animal feed as alfalfa
- Bamboo can convert society's waste nitrogen, mulch and water into a construction material that fixes 17 times as much carbon per acre as trees

PROPERTIES

- Compressive strength of bamboo is stronger than wood, brick and concrete
- Tensile strength of bamboo is as strong as steel
- Because of bamboo's ductility and light weight, houses built with the material have survived earth quakes of 6.7 magnitude

GROUND FLOOR



MEZZANINE FLOOR